Sept. 26, 1944. I. I. KLONER 2,358,811

LOUVER FOR LIGHTING FIXTURES

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FIG. 1.

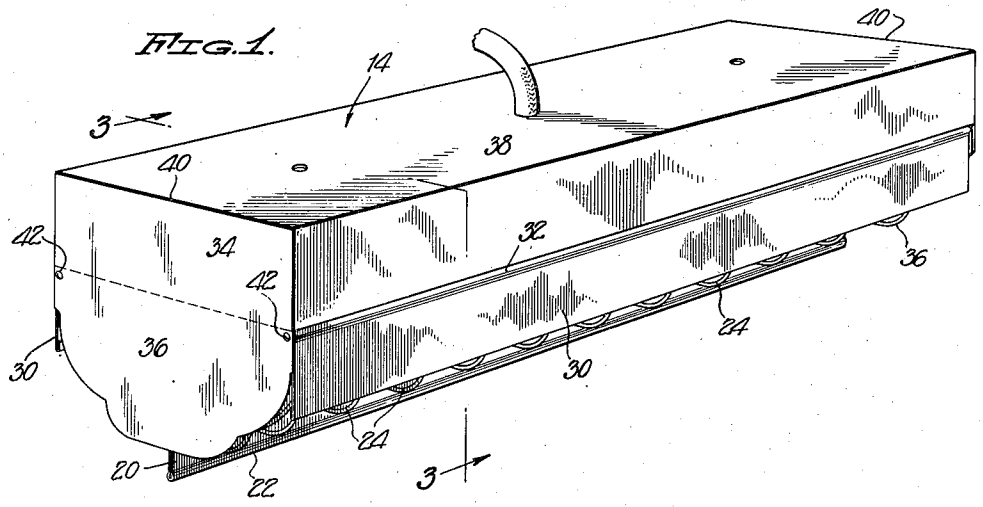


FIG. 2.

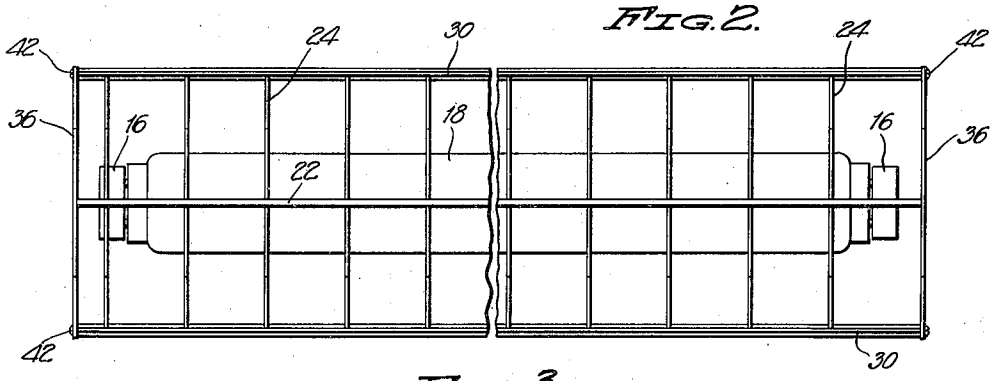
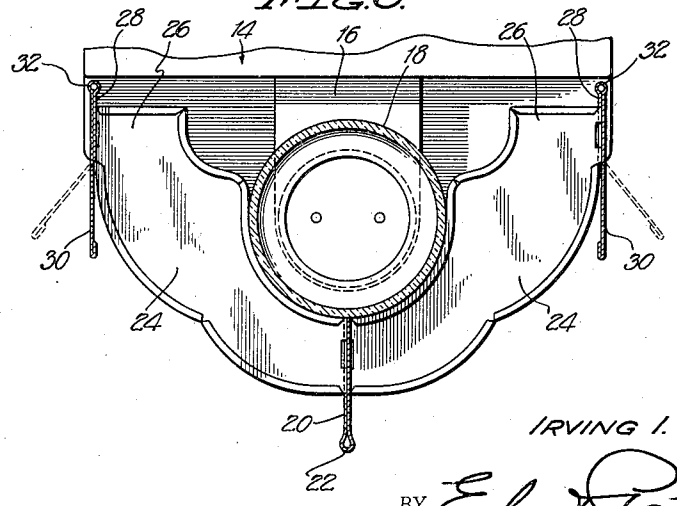


FIG. 3.



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FIG. 4.

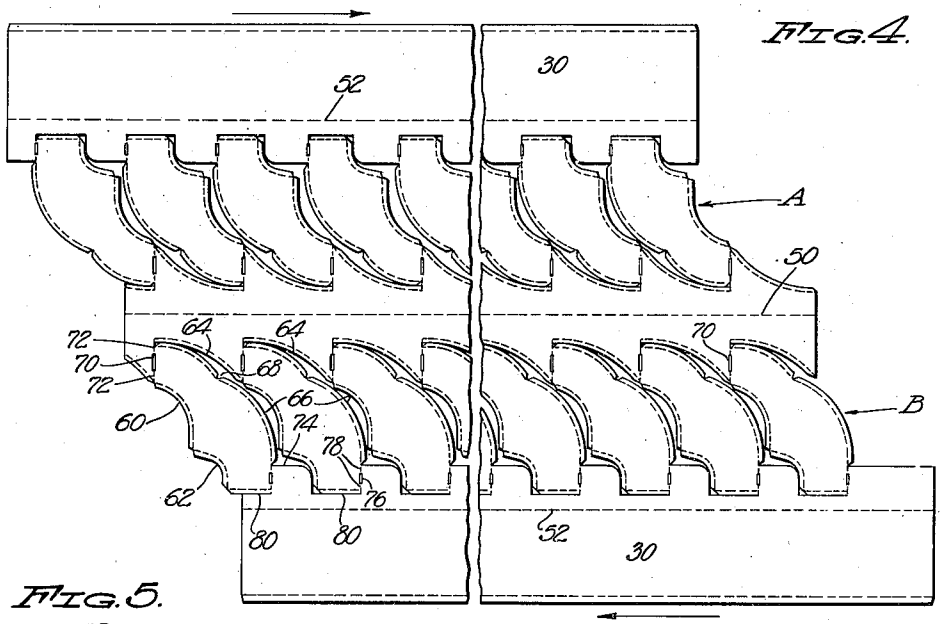


FIG. 5.

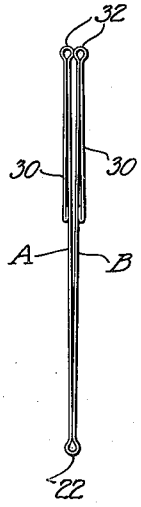


FIG. 6.

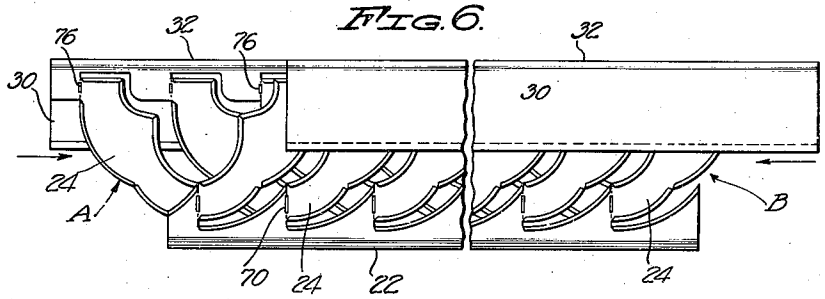
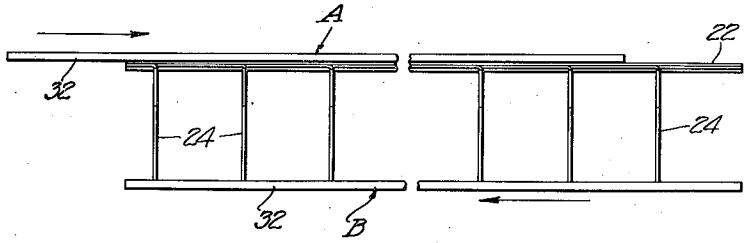


FIG. 7.



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FIG. 8.

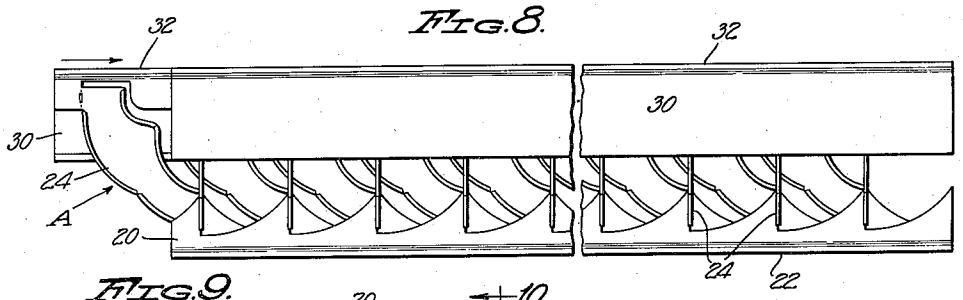


FIG. 9.

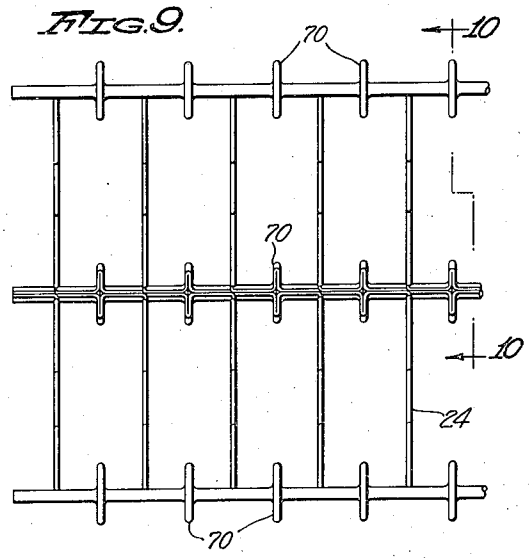


FIG. 10.

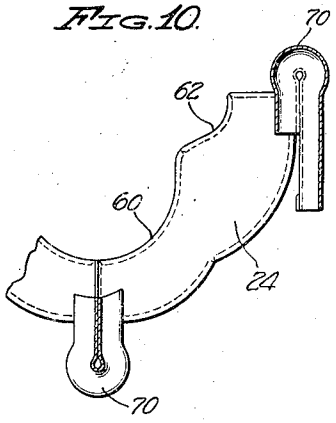


FIG. 11.

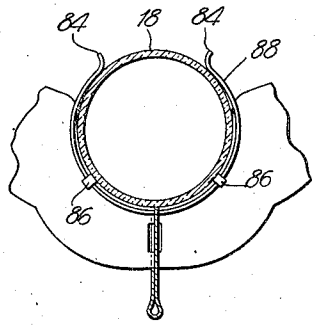
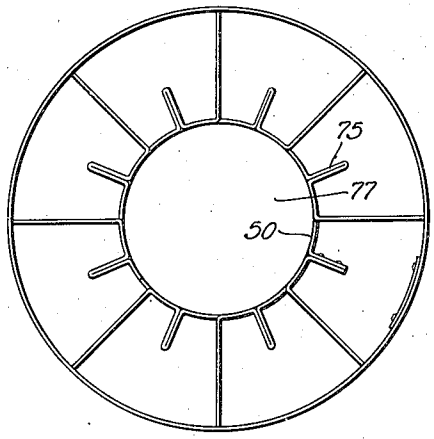


FIG. 12.



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UNITED STATES PATENT OFFICE

2,358,811

LOUVER FOR LIGHTING FIXTURES

Irving I. Kloner, Brooklyn, N. Y.

Application December 18, 1941, Serial No. 423,435

9 Claims. (Cl. 240—78)

This invention relates to new and useful improvements in lighting fixtures and more particularly it pertains to a novel construction of louvers for lighting fixtures and to a novel method of constructing the same.

It is one object of the invention to provide a complete lighting fixture in which the fixture housing has special features of construction for mounting the louver thereon in such a manner that it may be readily attached to the fixture housing, readily removed therefrom, or moved to a position relatively to the housing which will permit of access to portions of the fixture without removal of the louver from the fixture housing.

It is another object of the invention to provide a novel louver which may readily be attached to lighting fixtures or assemblies without requiring any particular structure of fixture housing.

It is another object of the invention to provide a combined louver and reflectors formed from a single piece of material.

It is still a further object of the invention to provide a new and novel method of forming a combined louver and reflector structure from a single piece of material.

Other objects of the invention will become apparent as the nature of the invention is better understood, and reference will now be had to the accompanying drawings and the following specification and claims.

In the drawings,

Figure 1 is a perspective view illustrating a fluorescent lighting fixture including a combined louver and reflector structure constructed in accordance with the present invention,

Figure 2 is a bottom plan view of the fixture illustrated in Figure 1,

Figure 3 is a transverse sectional view taken substantially on the line 3—3 of Figure 1,

Figure 4 is a plan view partly broken away illustrating a partially cut blank and the lines of fold upon which the blank is bent to form the louver and the reflectors,

Figure 5 is an end view in elevation illustrating the blank after it has been folded,

Figure 6 is a view in side elevation partly broken away of the blank after it has been folded,

Figure 7 is a plan view partly broken away illustrating the manner in which the two folded sections of the blank of Figures 5 and 6 are displaced relatively to each other to form the louver vanes,

Figure 8 is a view in side elevation partly broken away illustrating that form which the folded blank takes after one of the sections has been displaced relatively to the other section,

Figure 9 is a fragmentary plan view illustrating a slightly modified form of the invention,

Figure 10 is a fragmentary detail sectional view on an enlarged scale taken substantially on the line 10—10 of Figure 9,

Figure 11 is a fragmentary detail sectional view illustrating a construction for attaching the louver directly to a source of light, and;

Figure 12 is a plan view illustrating a still further modified form of the invention.

In Figures 1, 2 and 3, of the drawings, the lighting fixture is illustrated as of the fluorescent tube type which includes a housing 14, which carries tube sockets 16 for mounting a fluorescent tube 18, the specific construction of which several parts may be of any preferred type.

As heretofore stated, the present invention consists in part of a combined louver and reflector structure formed preferably from a single blank of material; and the construction of these elements will now be described.

The louver comprises a centrally disposed longitudinally extending rib 20 having its free or outer edge preferably formed with a small rounded bead 22. Extending laterally and outwardly from the central rib 20, there is a plurality of louver vanes 24.

In the present embodiment of the invention, these louver vanes are illustrated as positioned in a plane at right angles to the plane of the central rib 20, but this relative position of the vanes 24 to the central rib 22 may be slightly varied within certain limitations of course.

The louver vanes extend from opposite sides of the central rib 20 and are arranged in pairs with the vanes in each pair directly opposed to each other upon opposite sides of the central rib 20. The vanes 24, on opposite sides of the central rib, are spaced with respect to one another, the spaces between the vanes being preferably of equal dimensions.

The inner ends 26, of the several louver vanes upon each side, are preferably connected by longitudinally extending relatively narrow side walls 28 of which there is one upon each side of the central rib 20, see Figure 3.

The reflectors are designated 30, and there is one of these reflectors herein illustrated as extending longitudinally of each side of the louver. Reflectors 30 are formed by integral extensions of the relatively narrow side walls heretofore mentioned by folding said side walls upon themselves to provide outwardly extending members,

the inner faces of the lower portions of which form the actual reflecting surfaces.

At the points where the side walls 26 are folded upon themselves to form the reflectors 30, there is formed a relatively small hollow bead 32, the ends of which are left open for a purpose to be hereinafter described.

Integral end walls for the housings are formed preferably by bending the wall 38 thereof along the line designated 40 as shown in Figure 1 of the drawings. These end walls 34 have extensions 36 which serve as end members for the louver, and the outer edges of these extensions preferably conform in contour to that of the outer edges of the louver vanes.

The end members are formed with openings so positioned therein that when the louver is placed in position with respect to the housing 14, these openings will register with the open ends of the hollow beads 32. Screws 42 pass through these openings into threaded engagement with the interiors of the hollow beads 32, which construction provides the means for supporting the louver and its reflectors in position relatively to the lighting fixture housing 14.

By this construction, it will be obvious that upon removal of the screws 42 upon either side of the housing, the louver may swing about the remaining screws upon the other side of the housing, thus providing access to the light source and the interior of the housing without necessitating the removal of the louver from the housing.

Having thus described the invention, the manner in which the combined louver and the reflectors may be formed from a single blank of suitable material will now be described.

A blank suitable for forming a combined louver and reflectors of the type herein illustrated is shown in Figure 4. This blank comprises a rectangularly shaped body of suitable material, preferably sheet metal. It is divided into two sections A and B by a longitudinally extending center line 50, and each of these sections A and B are divided along the longitudinally extending lines 52 to provide the reflector sections 30. The two sections A and B are offset longitudinally of each other as illustrated in Figure 4 of the drawings for a specific purpose which will hereinafter become apparent.

The louver vanes 24 are formed within the sections A and B, and in the present embodiment of the invention are shown as of arcuate form. It is to be understood, however, that various other shapes of louver vanes may be had without departing from the spirit of the invention and that the form herein shown has been selected merely for the purpose of illustration.

The inner side edge of each louver vane is formed by cutting the blank along the curved lines 60 and 62, the major portion of the outer edge of each of the louver vanes being formed by cutting the blank along the curved lines 64 and 66. These outer edges are preferably notched as at 68 to permit of folding of the edges upon the dotted lines designated to form a smooth finish upon said edges.

The inner ends of the louver vanes are formed by cutting away portions of the blank as indicated at 70 and by creasing the blank upon opposite sides of the cut out portions 70 as designated 72 in Figure 4.

By reference to Figure 4 of the drawings, it will be noted that the curved lines 66 of the outer edges of the louver vanes terminate at a point 74 short of the outer ends of the louvers, and that the remaining portion 76 and two crease lines 78, the outer ends of the louver vanes being formed by the cut lines 80. As illustrated in dotted lines, the inner edges of the louver vanes may also be turned over to provide finished inner edges therefor if so desired.

By reference to Figure 4, it will also be noted that the louver vanes upon one side of the center line 50 occupy positions opposite to the positions of the louver vanes in the other section, and the reason for this arrangement will hereinafter appear.

After the blank has been cut in the manner heretofore described, the blank as illustrated in Figure 4, is folded or bent upon the lines 52 to dispose the reflectors into any desired angular relation to their respective side sections, and at this time the hollow beads 32 may be formed.

The blank is next bent or folded upon the center line 50 to bring the sections A and B in face to face relation to each other with the reflectors disposed outwardly of their respective sections. In folding the blank as just described, the hollow bead 22 heretofore mentioned may be formed.

After the blank has been folded upon the lines 50 and 52, it will appear in end elevation as illustrated in Figure 5 of the drawings and in side elevation as illustrated in Figure 6.

With the blank in the form in which it has just been described, the two sections A and B are displaced longitudinally of each other. This longitudinal displacement of the sections A and B effects a bending of the louver vanes upon the crease lines 72 and the crease lines 78, moving them into positions in planes at angles to the planes of their respective sections and the plane of the central longitudinally extending rib 20.

In Figures 7 and 8, the blank is illustrated as having had the section B offset longitudinally with respect to the section A, which might imply that the offsetting of the sections must be effected separately. It is to be understood, however, that this offsetting of the sections A and B may be accomplished by moving them separately relatively to each other if desired and that the invention is not to be limited to any particular method of displacing the sections A and B longitudinally with respect to each other.

After the sections A and B have been displaced longitudinally of each other, the ends of the two sections will coincide with each other and the louver vanes occupy positions in planes at the desired angles to the plane of the center rib 20, and the planes of the reflectors 30 as illustrated in Figure 3 of the drawings.

By reference to Figures 3 and 4 of the drawings, it will be noted that the curved lines of cut designated 64 and 66 form the ornamental outer edges of the louver vanes 24 while the curved lines of cut 60 of the louver vanes conform in shape to and surround the outer portion of the tube 18 of the light source in relatively close relation thereto.

In Figures 9 and 10 of the drawings, there is illustrated a manner in which the spaces between the louver vanes may be reduced if desired.

In such cases, gusset-like folds which are designated 70 in the drawings may be formed in the center rib 20, the reflectors 30 and those portions of the sections A and B between the inner ends of the louver vanes and their respective lines of fold 52.

While the louver has been described as being retained in position upon the lighting fixture

housing by the screws 42, it may be retained in position by other means such for example as illustrated in Figure 11 of the drawings.

In said Figure 11, certain of the louver vanes are illustrated as provided upon their inner edges with lugs 86 which provide means for attaching to the louvers, substantially circular resilient clips 88, having spaced ends 84. As illustrated in said Figure 11, the resilient clips 88 embrace the fluorescent tube 18, thus serving as means for attaching the louver and reflectors directly to the tube 18 from which the louver and reflectors are suspended in this form of the invention.

In Figure 12 of the drawings, there is illustrated a device which embodies the main principle of the present invention, the louver in this instance being especially adapted to a light source of the incandescent lamp type.

In forming a louver of this last mentioned character, but one section of the blank illustrated in Figure 4 is formed, and the manner in which this is accomplished will now be described.

The blank employed to produce a louver of this type would consist of one half of the blank shown in Figure 4 of the drawings being bounded upon one side edge by the line 50 and upon the other side edge by its respective reflector 30.

In forming a louver from a blank such as just described, the two side edges of the blank are displaced relatively to each other to throw the louver vanes to the desired angle after which the louver is bent to the circular form in which it is illustrated in Figure 12.

In bending the louver to said circular form, the reduction in diameter of the inner circular portion may be obtained by means of folds 75.

This described construction provides a circular louver for use with incandescent electric bulbs, the louver having a centrally disposed opening 77 and a plurality of spaced louver vanes radiating therefrom which will also be connected at their inner ends.

When the device is constructed for use with a light source of the incandescent bulb type, the contour of the inner edges of the louver vanes would necessarily have to be different from that shown in the accompanying drawings. It is to be understood, however, that the invention is not to be limited to any specific contour of inner and outer edges of the louver vanes since these contours may be varied as to the inner edges of the louver vanes to adapt the louver for use with any type of light source and in the case of the outer edges thereof, to obtain any desired ornamental effect.

From the foregoing, it will be apparent that the present invention provides a new and novel louver for lighting fixtures in which the light rays of a source of light are projected in a plane substantially at right angles to the plane of the source of light both directly and by reflection, and yet screen from view that source of light at other angles than that of the projected rays of light.

While the invention has been herein illustrated in its preferred form, it is to be understood that it is not to be limited to the specific construction set forth herein and that it may be practiced in such other forms as rightfully fall within the scope of the appended claims.

Having thus described the invention, what I claim as new is:

1. In a lighting fixture in combination, a housing having an open side adapted to receive a louver, a light source carried by the housing, extensions projecting from the end walls of the housing, and a louver adapted to be positioned in the open side of the housing and supported between the extensions of the end walls thereof, said louver comprising a central rib, louver vanes integral with said rib and extending angularly therefrom upon opposite sides thereof, a reflector integrally connected to the louver vanes upon each side of the central rib thereof, a hollow bead forming the integral connection between each reflector and its respective louver vanes, and means passing through the end walls of the housing and having removable engagement with said hollow beads for supporting the louver between the extensions of the end walls of the housing.

2. In a lighting fixture in combination, a housing having an open side adapted to receive a louver, a light source carried by the housing, and a louver adapted to be positioned in the open side of the housing, said louver comprising a relatively narrow longitudinally extending rib, arcuate shaped louver vanes integral with said rib projecting laterally from opposite sides of the rib in planes substantially at right angles to the plane thereof and extending in the direction of the plane of the rib to points beyond one edge thereof, reflectors carried by the louver vanes and extending from the outer edges thereof, and means for securing the louver within the open side of the housing.

3. In a lighting fixture in combination, an elongated housing having an open side, the end walls of said housing being of greater width than the side walls, whereby they extend beyond the outer edges of the side walls, a light source carried by and extending longitudinally of the housing, and a louver adapted to be positioned in the open side of the housing, said louver comprising a relatively narrow longitudinally extending rib, louver vanes projecting from opposite sides of the rib in planes substantially at right angles to the plane thereof and extending in the direction of the plane of the rib to points beyond one edge thereof, reflectors carried by the louver vanes and extending from the outer edges thereof, and means for securing the louver within the open side of the housing with the reflectors forming continuations of their respective side walls of the housing.

4. A lighting fixture of the type described comprising in combination, an elongated housing having an open side adapted to receive a louver and whose end walls extend beyond the free edges of its side walls, a light source carried by the housing, and a louver, said louver comprising a longitudinally extending rib, louver vanes projecting from opposite sides of the rib in planes substantially at right angles to the plane thereof and adapted to extend inwardly of the side walls of the housing when the louver is in position in the open side thereof, reflectors carried by the louver vanes and extending along the outer edges thereof to form continuations of the side walls of the housing when the louver is in position therein, and means for securing the louver to the end walls of the housing to retain the louver in position in the open side thereof.

5. A louver for lighting fixtures comprising a relatively narrow rib, arcuate louver vanes integrally connected at their lower ends to said rib and extending laterally and upwardly therefrom in a plane at substantially right angles to the plane of the rib, and a longitudinally extending side wall integrally connected to the upper ends

of the louver vanes for retaining them in spaced relation to one another.

6. A louver for lighting fixtures comprising a relatively narrow rib, arcuate louver vanes integrally connected at their louver ends to said rib and extending laterally and upwardly therefrom in a plane at substantially right angles to the plane of the rib, and longitudinally extending side walls integrally connected to the outer edges of the upper ends of the louver vanes for retaining them in spaced relation to one another, said longitudinally extending side walls being disposed in planes substantially parallel to the plane of the rib.

7. A louver for lighting fixtures as defined in claim 5 in which edge portions of at least some of the louver vanes are provided with notches, said edge portions being bent over to form smooth finished edges for said vanes.

8. A louver for lighting fixtures as defined in claim 5 in which the rib, vanes and side wall are made from a single flat blank sheet and in which spaced folds are provided in said rib and side wall for reducing the spacing distance between said vanes.

9. A louver for lighting fixtures as defined in claim 6 in which the rib, vanes and side walls are all made from a single flat blank sheet and in which parallel portions of the rib and the longitudinally extending side walls are provided with equal folds for reducing the spacing distance between the vanes.

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